

What is claimed is:

1. An interferometric measuring device for recording the shape, the roughness or the clearance distance of the surface of a measured object (8), having a modulation interferometer (2) to which short-coherent radiation is supplied by a radiation source (1), and which has a first beam splitter (2.3) for splitting the radiation supplied into a first beam component (2.1) guided via a first arm, and into a second beam component (2.1') guided via a second arm, of which the one is shifted with respect to the other with the aid of a modulating device (2.2, 2.2') in its light phase or light frequency, and passes through a delay line (2.9'), and which are subsequently united at an additional beam splitter (2.10) of the modulation interferometer (2), having a measuring probe (3) that is spatially separated from the modulating interferometer (2) and is coupled to it or able to be coupled to it via a light-conducting fiber set-up (6), in which the combined beam components are split into a measuring beam guided to the surface by a probe-optical fiber unit (3.1, 3.2) having a slantwise exit surface (3.4) on the object side and a reference beam, and in which the measuring beam ($r_1(t)$) reflected at the surface and the reference beam ($r_2(t)$) reflected at a reference plane are superposed, and having a receiver device (4) and an evaluating device (5) for converting the radiation supplied to it into electrical signals and for evaluating the signals on the basis of a phase difference, wherein the angle of inclination (γ) of the exit surface (3.4) to the normal of the optical probe axis (3.5) amounts to at least 46° .
2. The device as recited in Claim 1, wherein the angle of inclination (γ) amounts to at least 48° .

3. The device as recited in Claim 1 or 2, wherein a jacket-like covering (cladding) of an end section, at the object end, of the probe-optical fiber unit (3.2) is provided with an antireflection treatment (3.22).

4. The device as recited in one of the preceding claims, wherein the exit surface (3.4) is provided with a reflection treatment.

5. The device as recited in one of the preceding claims, wherein a partially transmitting region (3.3) is formed between a probe fiber (3.1) and a fiber section (3.2) of the measuring probe (3) with the aid of an exit surface (3.31) of a probe fiber (3.1) that slants at an exit angle (α) with respect to the optical probe axis (3.5) and an entrance surface (3.32) of a fiber section (3.2) that follows on the object side and that slants at an entrance angle (β) also with respect to the optical probe axis (3.5), between the exit surface (3.31) and the entrance surface (3.32) a wedge-shaped gap being formed, and the exit surface (3.31) and the entrance surface (3.32) being inclined in the same direction with respect to the probe axis (3.5).

6. The device as recited in Claim 5, wherein the exit angle (α) and the entrance angle (β) are selected so that a Fresnel reflection is effected.

7. The device as recited in Claim 5 or 6, wherein the exit angle (α) amounts to between 5° and 8° , and the entrance angle (β) amounts to between α and 0° .

8. The device as recited in one of Claims 5 through 7, wherein the probe fiber (3.1) and the fiber section (3.2) are accommodated in a tubule-shaped accommodation (3.6; 3.6', 3.6''), axially aligned, which is surrounded by an outer tube

(3.9) of the measuring probe (3);
on the end face of the accommodation (3.6; 3.6') that is
distant from the measuring object (8), a positioning piece
(3.7) is provided that surrounds the probe fiber (3.1) and is
also accommodated concentrically with the tube (3.9); and
the fiber section (3.2) is fixed in the object-side, front
part of the accommodation (3.6; 3.6'') and the probe fiber
(3.1) is fixed in the rear part of the accommodation (3.6;
3.6') that is distant from the object and/or in the tube
(3.9).

9. The device as recited in Claim 8,
wherein the front part of the accommodation (3.6'') is
separated from the rear part of the accommodation (3.6') by
diametrically opposite gaps (3.61, 3.62), the one gap (3.61)
being limited at the rear in the elongation of the slanting
exit surface (3.31) of the probe fiber (3.1), and the other
gap (3.62) being limited at the front in the elongation of the
slanting entrance surface (3.32);
the front part (3.6'') and the rear part (3.6') of the
accommodation are surrounded by a common sleeve-shaped
retaining ring (3.10), which is surrounded on its outside by
the tube (3.9); and
a front section of the fiber section (3.2) has a lesser
diameter compared to its rear section.

10. The device as recited in one of the preceding claims,
wherein the modulating interferometer (2) has at least
partially a polarization-maintaining light-conducting
structure (2.11, 2.11', 2.12, 2.12') in the form of an optical
fiber conductor or integrated optics, the light-conducting
structure (2.11, 2.11', 2.12, 2.12') of at least one arm being
interrupted.